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ACUTE POLYMYOSITIS.

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The following observations were made upon a microörganism obtained by blood culture in this laboratory, upon a case of acute polymyositis, in the service of Dr. Charles K. Mills, in the University Hospital. The case itself will be put on record later.

A. G.; acute polymyositis. Material at hand consisted of scrapings and exuded serum from a papular skin eruption. Save for Micrococcus epidermitis albus in the scrapings, these were sterile. Two days later a blood culture was taken (3 c.c. blood to 200 c.c. +1 per cent. glucose bouillon). Specimens were again taken from the then rapidly drying cutaneous eruption, with the same result as above. From the blood culture a coccus was obtained corresponding to the one described by Martinotti[1] in a kidney abscess and named by him Micrococcus polymyositis. The organism in the fifth generation was agglutinated quite promptly, by the patient's serum. This coccus is in many ways identical with Micrococccus pyogenes albus and aureus, and for purposes of comparison a recently isolated strain of the latter was run through with the "polymyositis" organism from this case. The technical work is appended, and from it we conclude that the organism in question does not deserve a separate species name, the proper course being to speak of it as Micrococcus pyogenes var. polymyositis.

Biologically the culture which we shall call No. 5308 in this report differs from the usual forms of Micrococcus pyogenes only as follows: Upon plates and slants both of agar and gelatin it grows as a grayish-blue colony, and only in older cultures may one see a faint grayish-yellow color. It is never dense white or bluish-white. Liquefaction of gelatin is not so rapid in 5308 as in the Micrococcus pyogenes. No constant difference, such as in stratiform or infundibuliform liquefaction, could be noted. Upon potato there is neither the intense orange of the "aureus" nor the porcelain appearance of the "albus." The medium is not colored. On milk the coagulation does not appear completed until the third or fourth day, after which the clot is so firmly contracted that a suggestion of digestion arises. This last, however, does not occur. It seems worthy of note that no growth was to be seen in the blood bouillon flasks until the end of the third day. These differences were observed in the third and tenth generations. The Micrococcus aureus used for comparison was also tried with the patient's serum. It was lightly agglutinated in the same time as a firm agglutination was observed with 5308.

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[1] Zentralblatt f. Bakteriologie, etc., 1898, xxiii, 877.

The Micrococcus aureus and 5308 gave almost identical results when injected intraperitoneally into guinea-pigs.

In rabbits a subcutaneous injection of Micrococcus aureus gave a sharply outlined local abscess. Injections of 5308 produced a diffuse, boggy, tender swelling, with a slight reddening of the skin, all of which subsided in three days without rupture or general involvement.

Both cultures under consideration were injected into the circulation of rabbits, using a completely emulsified twenty-four hour agar growth. The height of the symptoms in the 5308 animal was apparently reached at the end of the second day, and on the third morning both were chloroformed. Martinotti describes a peculiar lameness and gait, and emphasizes the extreme sensitiveness of the animal. Both our animals on the second day were huddled down in the corner of the cage and refused to move, crying piteously if they were forced to do so. No particular differences could be noted other than the greater sickness of the Micrococcus aureus animal. Intravenous injections of Micrococcus aureus gave pyemia, with numerous sharply outlined muscular abscesses very irregularly distributed, abscesses of the lungs, heart muscle, liver, kidney, and a mild seropurulent peritonitis. Injections of 5308 intravenously resulted in a few abscesses in the liver and kidney, and a very slight early plastic peritonitis. In the muscles of the extremities, along the vertebræ and in the pectorals, there were found enormous numbers of minute diffuse, pale gray areas surrounded by a zone of hemorrhage and edema of varying width. In the other muscles these were less numerous. The lesions are more severe in the Micrococcus aureus animal, and while this may suggest a lower virulence of 5308, there is surely some degree of specificity or predilection for the musculature. The virulence of 5308 is less than that outlined by Martinotti for his culture.

Unfortunately for the continuance of the work no rabbits were available when these animals were killed, and when a week later we could obtain the animals the 5308 culture had lost its virulence entirely and would not infect them. Indeed, 5 c.c. were required to kill a small guinea-pig, and it did not seem worth while to sacrifice animals further, since no increase was noted after two passages. It seems sufficiently proved that this 5308 is one of the Micrococcus pyogenes group, and should not be designated by a separate species name.

In a recent communication Schmitz[2] closely corroborates the above findings. There are a few noteworthy differences, however. His culture produced an intensely yellow growth especially upon ascites agar. My culture, now about nine months old, gave more pigment, a delicate yellow, upon serum agar than upon plain medium; at no time was the color intense. The virulence of his culture rapidly declined upon cultivation, and he noted a decline in virulence for rabbits in a re-isolation of the coccus from an abscess upon a guinea-pig isolated subcutaneously. He could, however, raise the virulence for rabbits by repeatedly inoculating them. His culture gave an infection picture close to that of Martinotti, but his control with Micrococcus aureus failed to show muscular involvement. Mayesima[3] reports a case in which he isolated a Micrococcus pyogenes albus from the blood. He believes the infection atrium may be the tonsil.

This blood-culture finding is interesting from two standpoints: (1) It is another case to support the view that acute polymyositis is a bacteremia due to a micrococcus, with curious and rather uniform predilection for the musculature by which a subspecies or variety of a pus former can produce a definite clinical picture, with lesions more or less characteristic, and quite different from those produced by the most conspicuous member of the group to which it belongs. What determines the bacterium in its behavior is of course wholly unknown, and there is nothing in the clinical knowledge to help us. The infection atrium and the receptivity of the host probably play parts. It is suggested that the infection assumes the form of polymyositis when a Micrococcus pyogenes bacteremia occurs in a person whose condition favors rheumatism. There is of course no pathologic basis for this, as the lesions are different. F. Gottstein[4] however, reports a case which was closely associated with one of acute articular rheumatism. Some attention is being given by the writer to the infections, particularly the subacute, in which pathogenic mutations are noted, and this case is but an example.

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[2] Zentralbl. f. Bakt. u. Par., Original, Band 65, 259.

[3] Deutsch. Zeitsch. f. Chir., 1910.

[4] Deutsch. Arch. f. klin. Med., August, 1907.